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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
JARRETT, SCOTT L	
ART UNIT	**PAPER NUMBER**
3623	

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/808,067	ABBOTT ET AL.	
	Examiner	Art Unit	
	Scott L. Jarrett	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-86* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-86* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 March 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/2/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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DETAILED ACTION

Drawings

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the figures are illegible and/or informal. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Method and System for Determining an Economically Optimal Dismantling Configuration of Machines to Meet Demand.

Claim Objections

3. Claims 1-86 are objected to because of the following informalities: the claims inconsistently spell de-manufacturing/demanufacturing and re-manufacturing/remanufacturing. Examiner suggests applicant amend claims and specification to spell the demanufacturing and remanufacturing consistently.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

4. Claims 1-29 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth in a two-prong test of:

(1) whether the invention is within the technological arts; and

(2) whether the invention produces a useful, concrete, and tangible result.

For a claimed invention to be statutory, the claimed invention must be within the technological arts. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological arts fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory subject matter. For a process claim to pass muster, the recited process must somehow apply, involve, use, or advance the technological arts.

Additionally, for a claimed invention to be statutory, the claimed invention must produce a useful, concrete, and tangible result.

Regarding Claims 1-29, Claims 1-29 only recite an abstract idea. The recited method for optimizing supply to meet demand does not apply, involve, use or advance the technological arts since all of the recited steps can be performed in the mind of the user or by use of a pencil and paper. The claimed invention, as a whole, is not within the technological art as explained above claims 1-29 are deemed to be directed to non-statutory subject matter.

Mere intended or nominal use of a component, albeit within the technological arts, does not confer statutory subject matter to an otherwise abstract idea if the component does not apply, involve, use, or advance the underlying process. In the present case, none of the recited steps are directed to anything in the technological arts as explained above with the exception of the recitation of the term "database" in claim 1. Therefore, the term discussed is taken to merely recite a field of use and/or nominal recitation of technology.

Examiner suggests that the applicant incorporate into Claims 1-29 language that the proposed method is a computer-implemented (computerized) method and that at least one of the method steps is implemented/performed by a computer to overcome this rejection.

Examiner interpreted Claims 1-29 to be a computer-implement method for optimizing a supply to meet a demand for the purposes of examination.

Correction required. See MPEP § 2106 [R-2].

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 3-4, 11, 19, 21-30, 32, 39, 47, 49-59, 61, 68, 76 and 78-86 rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al., U.S. Patent No. 5,965,858.

Regarding Claims 1, 30 and 58-59 Suzuki et al. teach a system and method for managing the recycling (restoration, repair, reuse, resale, de-manufacture, recovery, disassembly, etc.) of machines (articles, products) wherein the system utilizes recycle rules and a plurality of machine information (article specification, market information, parts/component information, statutory/regulatory, etc.) to determine/decide which recycling process/route (dismantling configuration, e.g. restoration, reused articles/parts, energy extraction, remanufacturing, etc.) will maximize the value of the collected machines and their components (Abstract; Column 2, Lines 24-68; Column 3, Lines 1-24; Column 6, Lines 19-44; Figures 1, 2, 3, 5,14-15, 23, and 30).

More specifically Suzuki et al. teach a system and method for optimizing a supply to meet a demand comprising:

- determining parts demand (market information database; Column 9, Lines 26-35; Column 10, Lines 26-40; Column 24, Lines 4-42; Figure 5, Element 41; Figure 30);

- determining machine supply (article information database; Column 13, Lines 52-68; Column 14, Lines 1-10; Column 35, Lines 1-25; Figure 5, Element 35; Figures 7 and 26);

- storing (maintaining) machine supply information in a database wherein the machine supply information includes: number of machines of a particular type (model, category, classification, manufacturer, etc.), a set of part types for each machine type, a monetary value for each part type and the number of each part type in each machine type (article information database, marketing information database; Column 9, Lines 26-35; Column 10, Lines 26-40; Column 13, Lines 52-68; Column 14, Lines 1-10; Column 24, Lines 4-42; Column 35, Lines 1-25; Column 36, Lines 1-34; Figure 5, Elements 35, 41, 350; Figures 7, 26, 30); and

- configuring (setting up, creating, determining, designing, etc.) an optimal dismantling (disassemble, de-manufacturing, etc.) configuration (recycle route/process) of the machine supply to meet the parts demand (i.e. determine what recycling process maximizes the value of the returned article; Column 24, Lines 4-41; Column 26, Lines 1-25; Column 40, Lines 1-13; Column 41, Lines 32-42).

FIG. 1

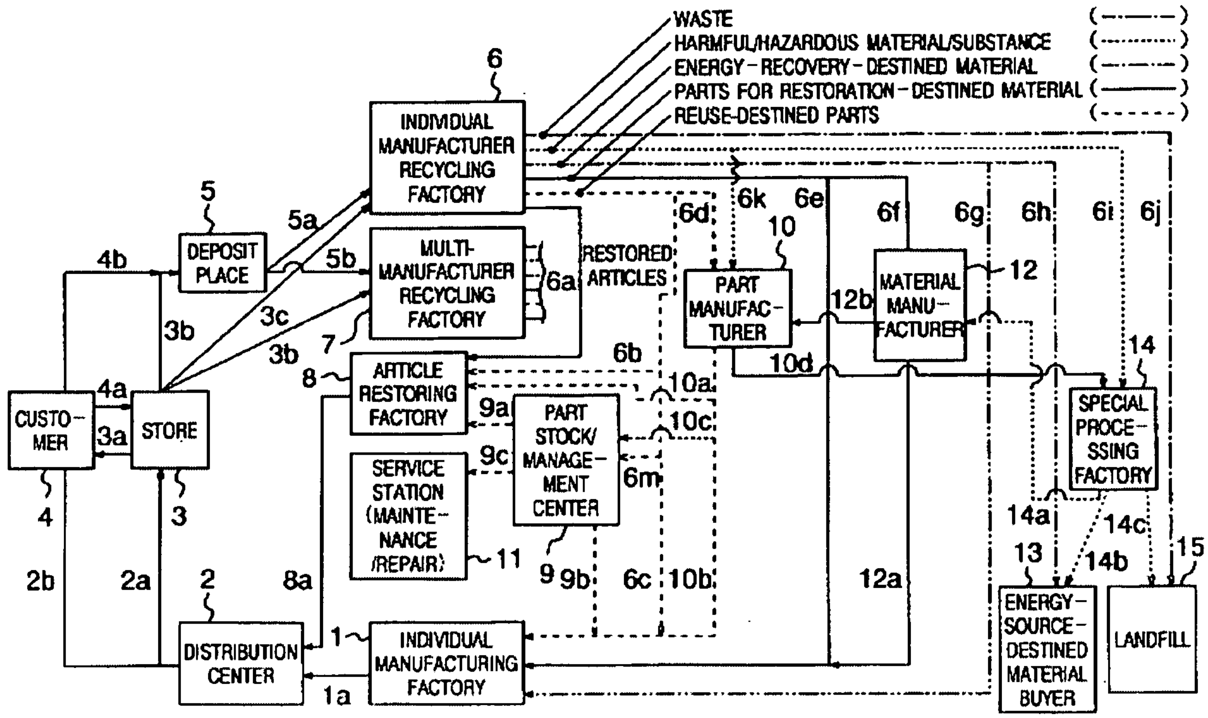
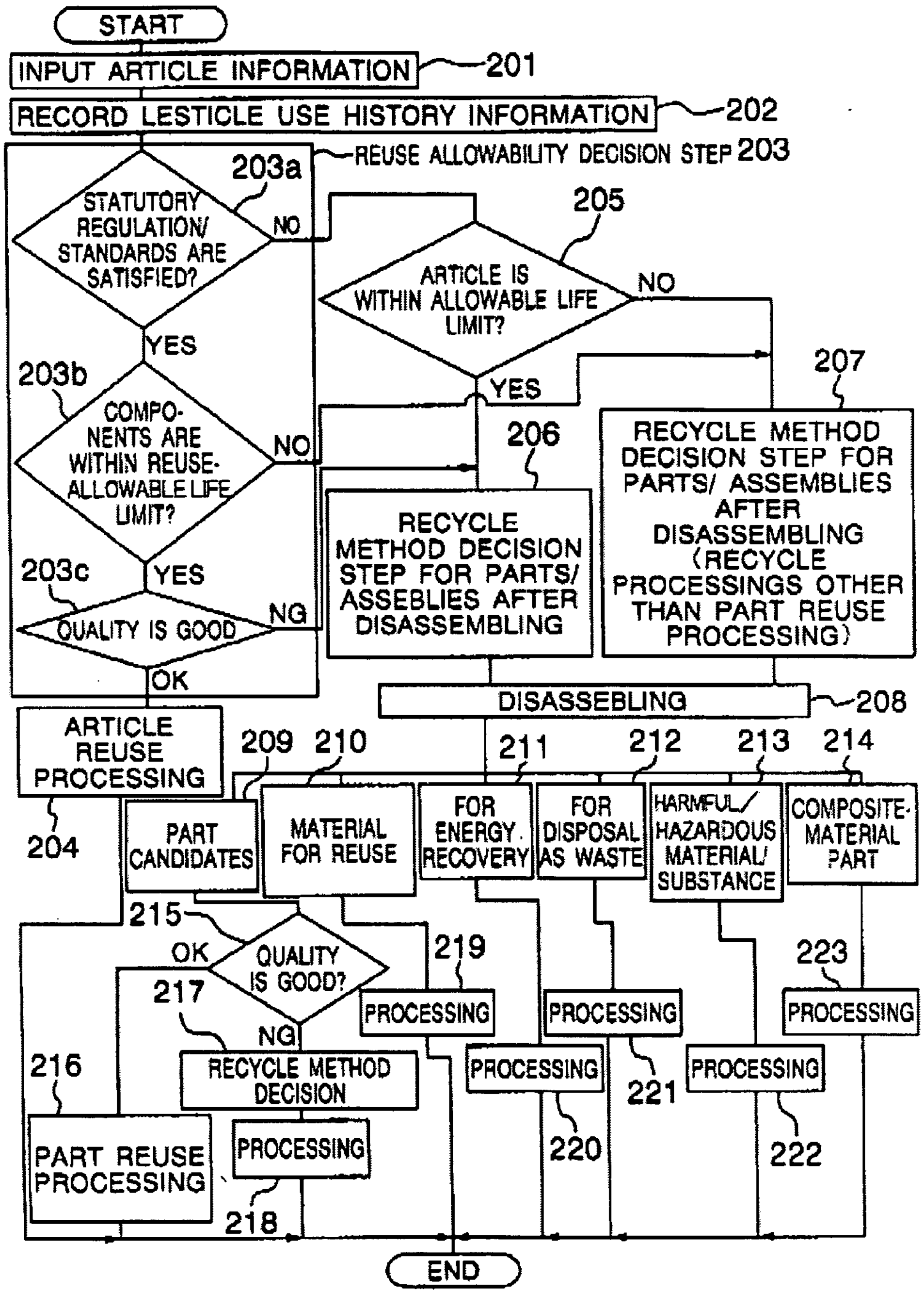
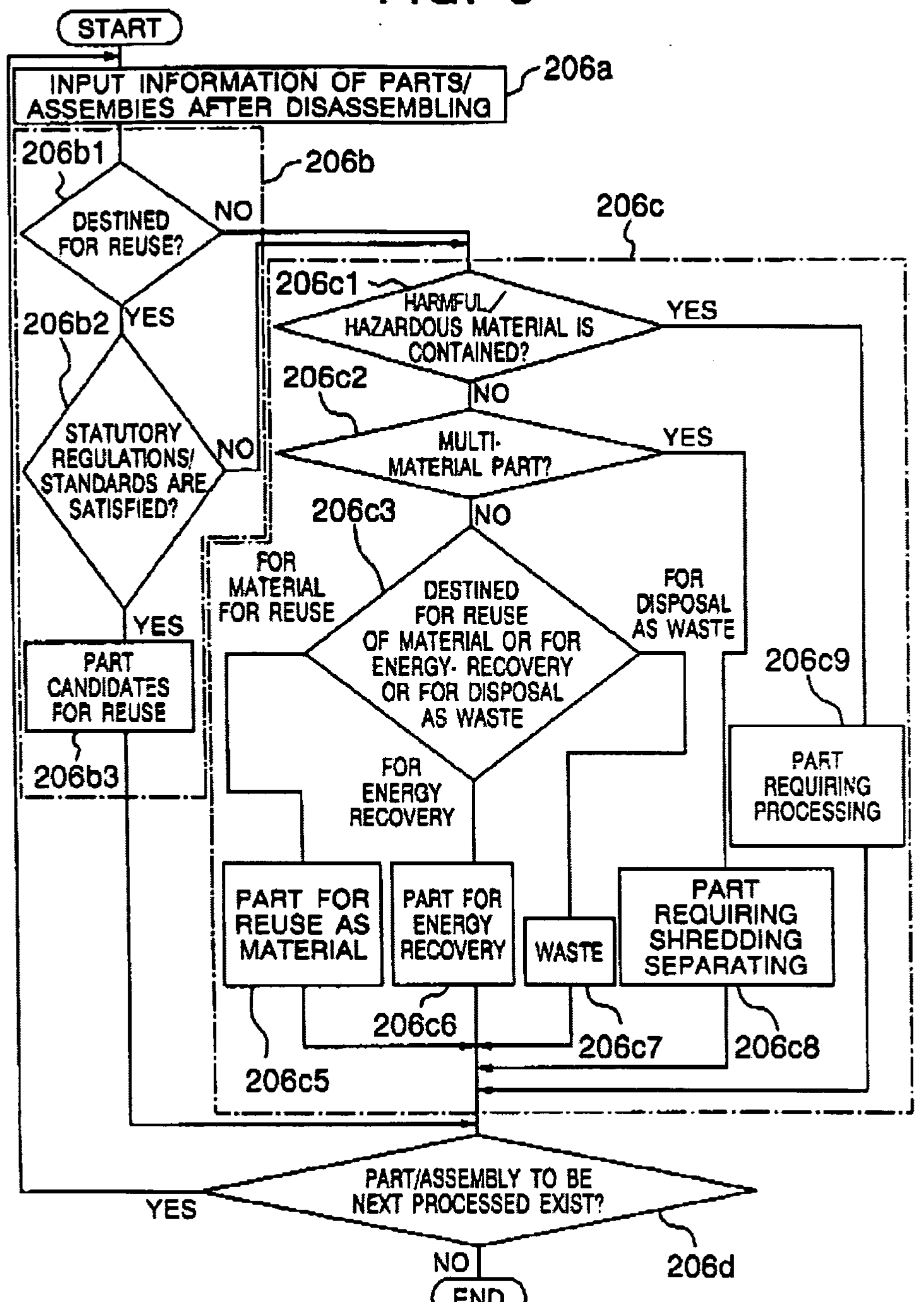

WASTE
HARMFUL/HAZARDOUS MATERIAL/SUBSTANCE
ENERGY-RECOVERY-DESTINED MATERIAL
PARTS FOR RESTORATION-DESTINED MATERIAL
REUSE-DESTINED PARTS
INDIVIDUAL MANUFACTURER RECYCLING FACTORY
MULTI-MANUFACTURER RECYCLING FACTORY
DEPOSIT PLACE
CUSTOMER
STORE
ARTICLE RESTORING FACTORY
SERVICE STATION (MAINTENANCE /REPAIR)
PART STOCK/ MANAGEMENT CENTER
RESTORED ARTICLES
PART MANUFACTURER
MATERIAL MANUFACTURER
SPECIAL PROCESSING FACTORY
ENERGY-SOURCE-DESTINED MATERIAL BUYER
LANDFILL
DISTRIBUTION CENTER
INDIVIDUAL MANUFACTURING FACTORY

FIG. 2



RECYCLE PROCESSING METHOD DECISION/RECYCLE PROCESSING EXECUTION PROCEDURE

FIG. 3



(STEP 206)

FIG. 5

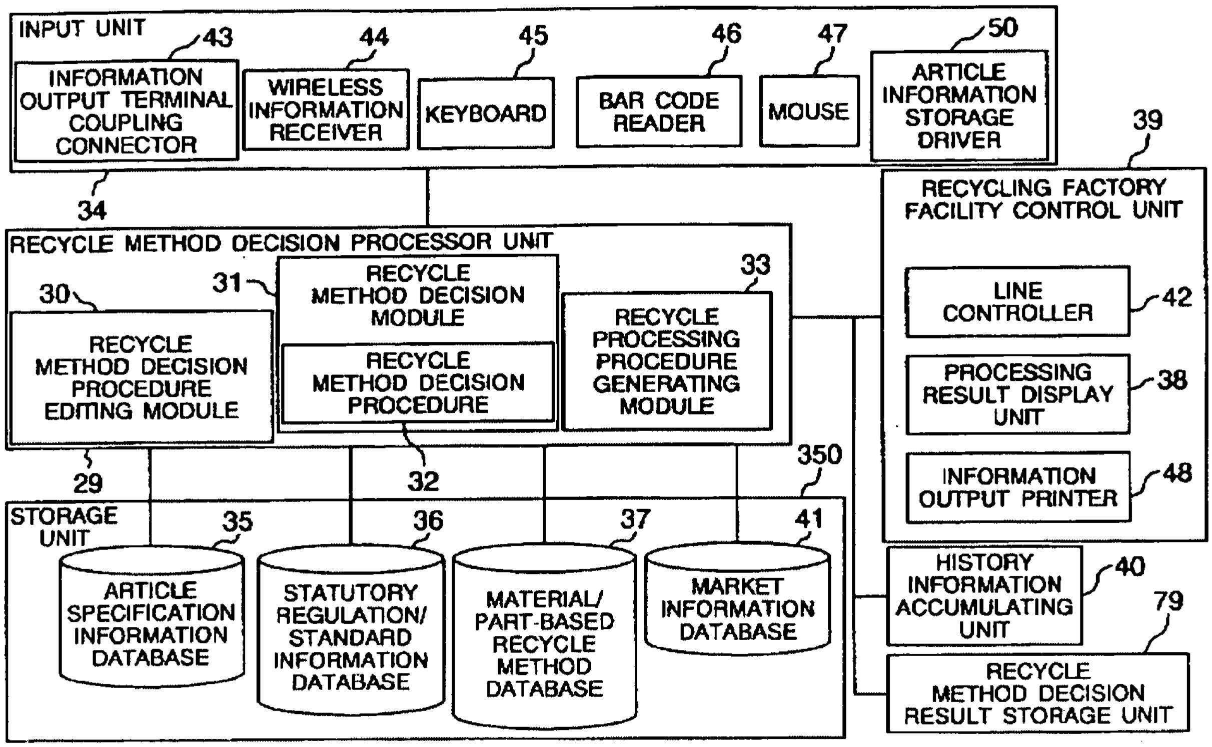
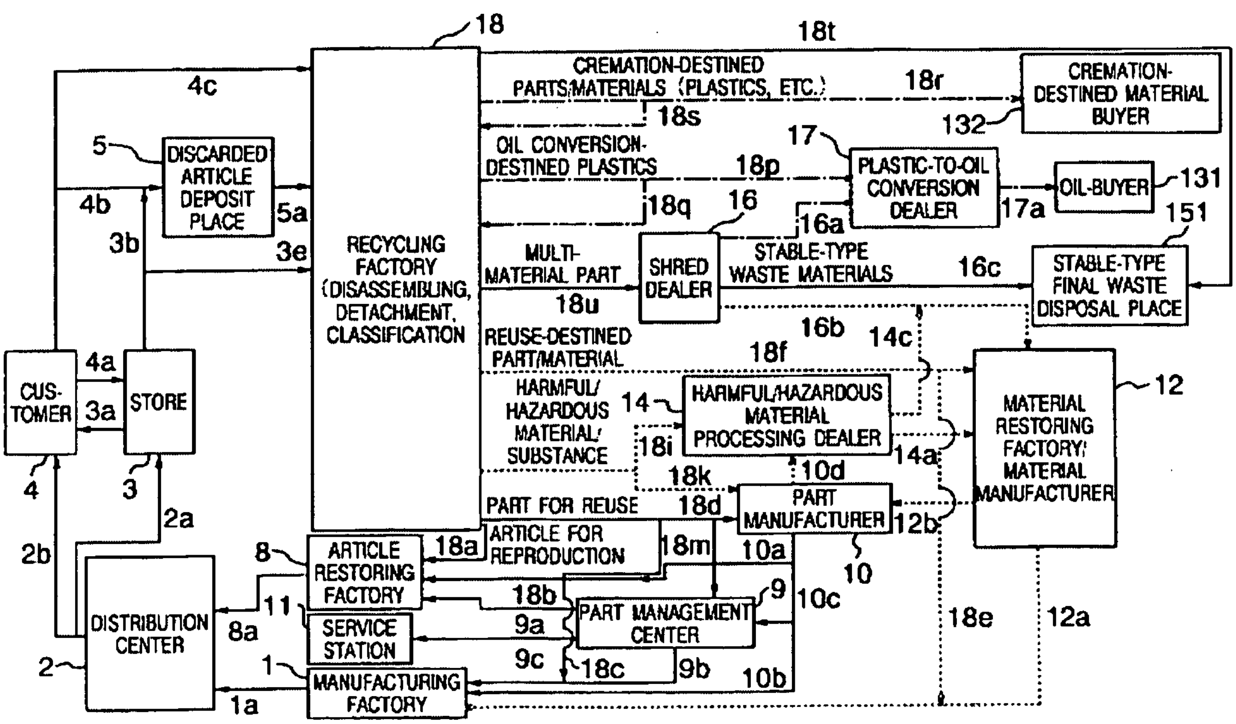

INPUT UNIT
43
INFORMATION OUTPUT TERMINAL COUPLING CONNECTOR
44
WIRELESS INFORMATION RECEIVER
45
KEYBOARD
46
BAR CODE READER
47
MOUSE
50
ARTICLE INFORMATION STORAGE DRIVER
34
39
RECYCLING FACTORY FACILITY CONTROL UNIT
RECYCLE METHOD DECISION PROCESSOR UNIT
30
RECYCLE METHOD DECISION PROCEDURE EDITING MODULE
31
RECYCLE METHOD DECISION MODULE
RECYCLE METHOD DECISION PROCEDURE
32
33
RECYCLE PROCESSING PROCEDURE GENERATING MODULE
LINE CONTROLLER
42
PROCESSING RESULT DISPLAY UNIT
38
INFORMATION OUTPUT PRINTER
48
29
350
STORAGE UNIT
35
ARTICLE SPECIFICATION INFORMATION DATABASE
36
STATUTORY REGULATION/ STANDARD INFORMATION DATABASE
37
MATERIAL/ PART-BASED RECYCLE METHOD DATABASE
41
MARKET INFORMATION DATABASE
HISTORY INFORMATION ACCUMULATING UNIT
40
79
RECYCLE METHOD DECISION RESULT STORAGE UNIT

FIG. 23


18
18t
4c
CREMATION-DESTINED PARTS;MATERIALS (PLASTICS, ETC.)
18r
CREMATION-DESTINED MATERIAL BUYER
18s
132
5
DISCARDED ARTICLE DEPOSIT PLACE
OIL CONVERSION-DESTINED PLASTICS
17
18p
PLASTIC-TO-OIL CONVERSION DEALER
OIL-BUYER
131
4b
5a
18q
16
16a
17a
151
3b
3e
RECYCLING FACTORY (DISASSEMBLING, DETACHMENT, CLASSIFICATION
MULTI-MATERIAL PART
SHRED DEALER
STABLE-TYPE WASTE MATERIALS
16c
STABLE-TYPE FINAL WASTE DISPOSAL PLACE
18u
16b
14c
REUSE-DESTINED PART/MATERIAL
18f
4a
CUS-TOMER
3a
STORE
HARMFUL/ HAZARDOUS MATERIAL/ SUBSTANCE
14
HARMFUL/HAZARDOUS MATERIAL PROCESSING DEALER
18i
14a
MATERIAL RESTORING FACTORY/ MATERIAL MANUFACTURER
12
4
3
18k
10d
PART FOR REUSE
18d
PART MANUFACTURER
12b
2a
8
ARTICLE RESTORING FACTORY
18a
ARTICLE FOR REPRODUCTION
18m
10a
2b
10
11
18b
9
10c
DISTRIBUTION CENTER
8a
SERVICE STATION
9a
PART MANAGEMENT CENTER
18e
12a
2
1
9c
18c
9b
10b
MANUFACTURING FACTORY
1a

Regarding Claim 3 Suzuki et al. teach a recycling management system and method wherein the parts demand further comprises (Column 6, Lines 35-68; Column 7, Lines 1-68; Figures 1 and 23) internal (manufacturing utilized restored/recycled parts; Column 8, Lines 2-6) and external demand ("commercially demanded"; Column 39, Lines 62-68; Column 40, Lines 1-14).

Regarding Claims 4, 32 and 61 Suzuki et al. teach a recycling management system and method further comprising determining a least a portion of the machine supply that is not economically justified (i.e. not profitable) for dismantling (de-manufacture, disassembly, restoration, repair, etc.; e.g. determine what recycling process maximizes the value of the returned article, determine if harvesting a part/component would be profitable and if recycling of the part is not profitable then disposing of it; Column 24, Lines 4-41; Column 26, Lines 1-25; Column 40, Lines 1-13; Column 41, Lines 32-42).

Regarding Claims 11, 39 and 68 Suzuki et al. teach a recycling management system and method further comprising:

- determining the parts supply from the machine supply (e.g. determining the number of parts/components in a machine; Column 10; Lines 8-25; Figure 7); and
- matching (comparing) the parts supply and parts demand (e.g. providing/selling the "commercially demanded" articles/parts to internal/external users; Column 24, Lines 4-42; Column 39, Lines 62-68; Column 40, Lines 1-14).

Regarding Claims 19, 21, 47, 49, 76 and 78 Suzuki et al. teach a recycling management method and system wherein the machine supply information further comprises a number/estimate of parts for each machine (Column 10, Lines 7-25; Figure 7).

Regarding Claims 22, 50 and 79 Suzuki et al. teach a recycling management method and system wherein the machine supply information further comprises fair market value of the part and machine types (categories, classification, model name, standard market price; market information database; Column 14, Lines 33-35; Column 24, Lines 4-42; Figure 30).

Regarding Claims 23, 51 and 80 Suzuki et al. teach a recycling management method and system wherein the machine supply information further comprises costs of de-manufacturing (disassembling, separating, etc.) a specific machine type (Column 24, Lines 4-42; Figure 26).

Regarding Claims 24, 52 and 81 Suzuki et al. teach a recycling management method and system wherein the machine supply information further comprises data on the quality (grade, remaining life) of the parts yielded from the de-manufacturing of a machine type (quality check; Column 23, Lines 40-65; Figures 7 and 31).

Regarding Claims 25, 53 and 82 Suzuki et al. teach a recycling method and system wherein the machine supply information further comprises detailed parts information (codes, abbreviation, designator, label, details, etc.) for options (model, make, parts, etc.) on each of the machine (Column 1-, Lines 7-25; Column 35, Lines 1-68; Figure 7).

Regarding Claims 26, 54 and 83 Suzuki et al. teach a recycling management method and system wherein the machine supply information further comprises quality (grade) of each of the machine types (quality check; Column 10, Lines 12-25; Column 23, Lines 40-65; Figures 7 and 31).

Regarding Claims 27, 55 and 84 Suzuki et al. teach a recycling management method and system wherein the machine supply information further comprises de-manufacturing (decomposing, disassembling, separating, etc.) cycle times for machine types (Column 40, Lines 30-38 and 60-68; Figure 26).

Regarding Claims 28, 56 and 85 Suzuki et al. teach a recycling management method and system wherein the machine supply information further comprises refurbishing (repair, restoration, re-manufacturing, etc.; Column 24, Lines 4-42) cycle times.

Regarding Claims 29, 57 and 86 Suzuki et al. teach a recycling management method and system wherein the machine supply information further comprises repair costs for each of the part types (Column 24, Lines 4-42).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 2, 5-10, 12, 20, 31, 33-38, 40, 48, 60, 62-67, 69 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al., U.S. Patent No. 5,965,858 as applied to claims 1, 3-4, 11, 19, 21-30, 32, 39, 47, 49-59, 61, 68, 76 and 78-86 above.

Regarding Claims 2, 31 and 60 Suzuki et al. does not expressly teach that that at least a portion of the parts demand cannot be satisfied (met) from the machine supply.

Official notice is taken that it is old and very well known in combined (hybrid) manufacturing/remanufacturing environments, such as the one taught by Suzuki et al. (Column 8, Lines 1-6), that the overall demand for a product (article, part, etc.) is met by both the manufacturing of newly manufactured products and the remanufacturing of products, the combined manufacturing process being capable meeting the overall product demand wherein either one of the manufacturing processes, singularly, would leave at least a portion of the overall demand unsatisfied.

It would have been obvious to one skilled in the art at the time of the invention that the recycling management system and method, with its ability to meet internal and external demands for articles/parts based at least in part of the economic profitability of the recycling process (dismantling configuration, recycle route) and the utilization of combined manufacturing/recycling environments, as taught by Suzuki et al. would have had a least a portion of it demand that could not be met solely with the recycled product supply in view of the teachings of official notice; the resultant system enabling the firm (business) to meet the total product/part demand utilizing newly manufactured and remanufactured products.

Further it is noted that the recitation that at least a portion of the parts demand cannot be satisfied represents non-functional descriptive material since the system as claimed does not utilize the data/information regarding the lack of parts supply in a tangible manner (i.e. to determine a production schedule, etc.) therefore the collected data does not change/effect the overall functionality of the system.

Regarding Claims 5, 33 and 62 Suzuki et al. teach a recycling management system and method wherein the system utilizes recycle rules and information to determine the optimal recycling route/process (dismantling configuration) to pursue and further wherein the system determines a portion of the machine supply that is <u>not</u> economically justified for dismantling further comprises determining (calculating, estimating, deciding, etc.) the machine profit (Column 24, Lines 4-42) and if the

machine is determined to be not profitable then determining the parts (components, elements, etc.) profit (Column 39, Lines 62-68; Column 40, Lines 1-14; Column 42, Lines 37-68; Column 43, Lines 1-6).

Suzuki et al. does not expressly teach determining if a machine's parts profit is greater then the machine profit by a predetermined percentage as claimed.

Official notice is taken that comparing the value (profit, revenue, etc.) of a whole entity (article, product, etc.) to its components is old and very well known as a providing a mechanism for determining/deciding if the whole entity is "worth", within a given threshold (range, value, percentage), more or less than its components.

For example automobile junkyards/scrap operations commonly evaluate collected/returned automobiles to determine whether a recycled/collected automobile should be sold repaired/restored and sold (i.e. a rare car that is in great shape requiring only a minimal amount of work to make it resalable), as scrap or disassemble the car for it replacement parts (e.g. junkyards frequently keep cars they know people need/want parts for and selling the parts to collectors one piece at a time and generating higher value (revenue, profit, etc.) than would have been earned if the car had been recycled for its raw materials).

It would have been obvious to one skilled in the art at the time of the invention that the recycling management method and system, with its goal of maximizing the

value (profit, revenue, etc.) of the recycled articles/parts and its determination of both machine and parts profit, as taught by Suzuki et al. would have benefited from creating a recycle rule to compare the machine and parts profits in order to determine which recycling process (route, dismantling configuration) would yield the highest value/profit (i.e. determine if the machine as a whole or the recycling of its parts would be more profitable) in view of the teachings of official notice; the resultant system maximizing value of the recycled products by effectively utilizing the article/part to the maximum extent (Suzuki et al.: Column 6, Lines 35-40).

Further it is noted that the step of determining if a machine's parts profit is greater then the machine's profit by a predetermined percentage as claimed represents non-functional descriptive material since the method/system does to utilize the calculated data/information in a tangible manner therefore the collected data/information does not change/effect the overall functionality of the system.

Regarding Claims 6, 34 and 63 Suzuki et al. teach a recycling management system and method further comprising determining a parts profit equal to the machine net investment book value (purchase price of the article/part) plus cost to de-manufacture (restore, repair, disassemble, etc.) the machine minus the parts value (external demand, "standard market price", fair market value; Column 24, Lines 4-42; Column 39, Lines 52-68; Column 40, Lines 1-14; Column 41, Lines 31-42; Column 42, Lines 37-68; Column 43, Lines 1-6; Figure 30).

Suzuki et al. teach that the recycling management system captures article level information, specifically the investment/standard purchase price to determine a specific machine's article/parts profit however Suzuki et al. does not expressly teach utilizing the average machine net investment book value as claimed.

Official notice is taken that utilizing an average value to represent/generalize a group of actual values and/or the utilization of average values in place of actual values for a parameter is especially useful in environments where the actual/individual parameter values are unknown/unavailable is old and well known.

It would have been obvious to one skilled in the art at the time of the invention that the recycling management system and method, with its ability to determine a machine's specific (unique, actual) profit and its associated parts profit, as taught by Suzuki et al. would have benefited from utilizing an average investment book value (e.g. average purchase price) in place of the actual book value in view of teachings official notice; the resultant system enabling the determination of machine/parts profits in an environment where the actual investment book value is unavailable.

Regarding Claims 7, 10, 35, 38, 64 and 67 Suzuki et al. teach a recycling management system and method further comprising determining a machine profit equal to the actual machine net investment book value (purchase price of the article/part) plus

the machine remanufacturing (restoration, repair, etc.) cost minus the machine market value (Column 24, Lines 4-42; Column 39, Lines 52-68; Column 40, Lines 1-14; Column 41, Lines 31-42; Column 42, Lines 37-68; Column 43, Lines 1-6; Figure 30).

Suzuki et al. teach that the recycling management system captures article level information, specifically the investment/purchase price to determine a specific machine's article/parts profit however Suzuki et al. does not expressly teach utilizing the average machine net investment book value or average market value as claimed.

Official notice is taken that utilizing an average value to represent/generalize a group of actual values and/or the utilization of average values in place of actual values for a parameter is especially useful in environments where the actual/individual parameter values are unknown/unavailable is old and well known.

It would have been obvious to one skilled in the art at the time of the invention that the recycling management system and method, with its ability to determine a machine's specific (unique, actual) profit and its associated parts profit utilizing the actual purchase price and standard market price, as taught by Suzuki et al. would have benefited from utilizing an average investment book value (e.g. average purchase price) in place of the actual book value as well as an average market price in place of a standard market price in view of teachings official notice; the resultant system enabling

the determination of machine/parts profits in an environment where the actual values/parameters are unavailable/unknown.

Regarding Claims 8, 36 and 65 Suzuki et al. teach a recycling management system and method wherein the system determines that at least a portion of the supply that is <u>not</u> economically justified for dismantling as well as machine and parts profit as discussed above.

Suzuki et al. does not expressly teach determining if a machine's parts profit is greater then the machine profit as claimed.

Official notice is taken that comparing the value (profit, revenue, etc.) of a complete machine to its component parts is old and very well known as a providing a mechanism for determining/deciding if the complete machine is worth more or less that its components parts as discussed above.

It would have been obvious to one skilled in the art at the time of the invention that the recycling management method and system, with its goal of maximizing the value (profit, revenue, etc.) of the recycled articles/parts and its determination of both machine and parts profit, as taught by Suzuki et al. would have benefited from creating a recycle rule to compare the machine and parts profits in order to determine which recycling process (route, dismantling configuration) would yield the highest value/profit

(i.e. determine if the machine as a whole or the recycling of its parts would be more profitable) in view of the teachings of official notice; the resultant system maximizing value of the recycled products by effectively utilizing the article/part to the maximum extent (Suzuki et al.: Column 6, Lines 35-40).

Further it is noted that the step of determining if a machine's parts profit is greater then the machine's profit as claimed represents non-functional descriptive material since the method/system does to utilize the calculated data/information therefore the collected data/information does not change/effect the overall functionality of the system.

Regarding Claims 9, 37 and 66 Suzuki et al. teach a recycling management system and method wherein the system determines a parts profit equal to the machine net investment book value plus the cost of de-manufacturing (decomposing, disassembling, etc.) the machine/parts minus the market/demand value/price as discussed above. Suzuki et al. further teach that parts/components recycled from the articles are used internally to manufacture new products (i.e. internal demand, assembly stock; Column 8, Lines 2-6; Column 32, Lines 64-68; Column 33, Lines 1-27) and that "commercially demand" products can be given priority (Column 26, Lines 6-12).

Suzuki et al. does not expressly teach that the parts book value is a function of the total parts with internal demands average net investment book value and a cost adjustment as claimed.

Official notice is taken that making/using adjustment factors when comparing internal and external parameters/values (demand, sales, costs, revenues, etc.) is old and very well known as providing a mechanism for standardizing (normalizing, weighting, etc.) the parameters so that they can be compared in a more equitable fashion.

For example companies making investment decisions, internal and external investments, commonly use adjustment factors to compensate for differences in such factors as internal vs. external costs and in doing so enabling a more equitable comparison of the internal and external investment options.

It would have been obvious to one skilled in the art at the time of the invention that the recycling management system and method as taught by Suzuki et al. would have benefited from utilizing a plurality of well known business techniques including but not limited to utilizing adjustment factors in view of the teachings of official; the resultant system enabling business to more equitably compare (i.e. "apples to apples") the costs/benefits of utilizing a recycled product/part to meet internal or external demand.

Regarding Claims 12, 40 and 69 Suzuki et al. teach a recycling management system and method wherein the determining the parts supply further comprises:

- determining the part types in a particular machine type (Column 10, Lines 7-25; Figure 7); and

- determining the number of each of the part types in a particular machine (Column 10, Lines 7-25; Figure 7).

Suzuki et al. does not teach multiplying each of the part types in a particular machine by the number of machines for a particular machine type in the supply (i.e. determining the total number of a particular part type available from all the machines) as claimed.

Official notice is taken that determining a supply of items (parts, articles, components, etc.) utilizing the equation (Number of Parts/Machine * Number of Machines) is a well-known mathematical formula/calculation.

It would have been obvious to one skilled in the art at the time of the invention that the recycling management system and method would have benefited from determining the total number of a particular part type available from all the machines current available in view of official notice; the resultant system enabling businesses to determine the amount of stock/inventory available for production, sale, reuse or the like.

Regarding Claims 20, 48 and 77 Suzuki et al. does not teach that the machine/parts supply information comprises a forecast as claimed.

Official notice is taken that forecasting demand in manufacturing systems is old and very well known and enables business to plan resources, production schedules and the like based on the forecasted demand.

It would have been obvious to one skilled in the art at the time of the invention that the recycling management system and method as taught by Suzuki et al. would have benefited from utilizing forecasted demand data (e.g. a forecast/estimated number of machines/parts available at a pre-determined time) in view of official notice; the manufacturing system being capable of planning for the forecasted demand (production/resource scheduling).

9. Claims 13-14, 41-42 and 70-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al., U.S. Patent No. 5,965,858 as applied to claims 1-12, 19-40, 47-69 and 76-86 above and further in view of Kaburagi et al., U.S. Patent No. 6,732,417.

Regarding Claims 13, 41 and 70 Suzuki et al. teach a recycling management system and method further comprising:

- generating (creating, developing, etc.) covered (demand met) and not-covered (demand not met) parts if the parts supply is less than the parts demand;

- determining an optimal dismantling configuration (mix, set, etc.) of machines in the covered parts list (i.e. optimal recycling route/process for machines currently in inventory/available;).

Suzuki et al. does not expressly teach determining an optimal configuration of machines to harvest from the not-covered list as claimed.

Kaburagi et al. teach determining the kind of products that need to be harvested (collected), in an analogous art of recycling management, for the purposes of acquiring (harvesting) the products/parts necessary to meet a shortfall, with respect to demand, in product/parts supply (insufficient recycle material managing section; Column 3, Lines 6-19; Column 4, Lines 33-48; Column 20, Lines 1-68; Column 23, Lines 13-18; Figures 1-4).

More generally Kaburagi et al. teach a product (automobile) dismantling/disassembling system and method wherein the system further comprises:

- determining a machine supply (used parts, recycle material, dismantling databases; Columns 13-14; Figures 5-11);

- maintaining a plurality of product (machine supply) and part (construction part) information including but not limited to quality/grade, component parts, machine type, machine forecast/estimate and the like (Column 5, Lines 4-38; Column 7, Lines 55-62; Figures 5-11) in several of databases;

- determining an dismantling/disassembly (repair, reuse, regenerate, raw material, resale, etc.) configuration of the machine supply to meet the parts demand as a function of the machine supply information ();

- determining that at least a portion of the machine/part supply will not satisfy (insufficient) the demand (shortfall; Column 20;); and

- maintaining historical (past) and forecasted machine supply information (past collection information managing section; Column 3, Lines 43-54; Column 4, Lines 49-65) .

FIG.2

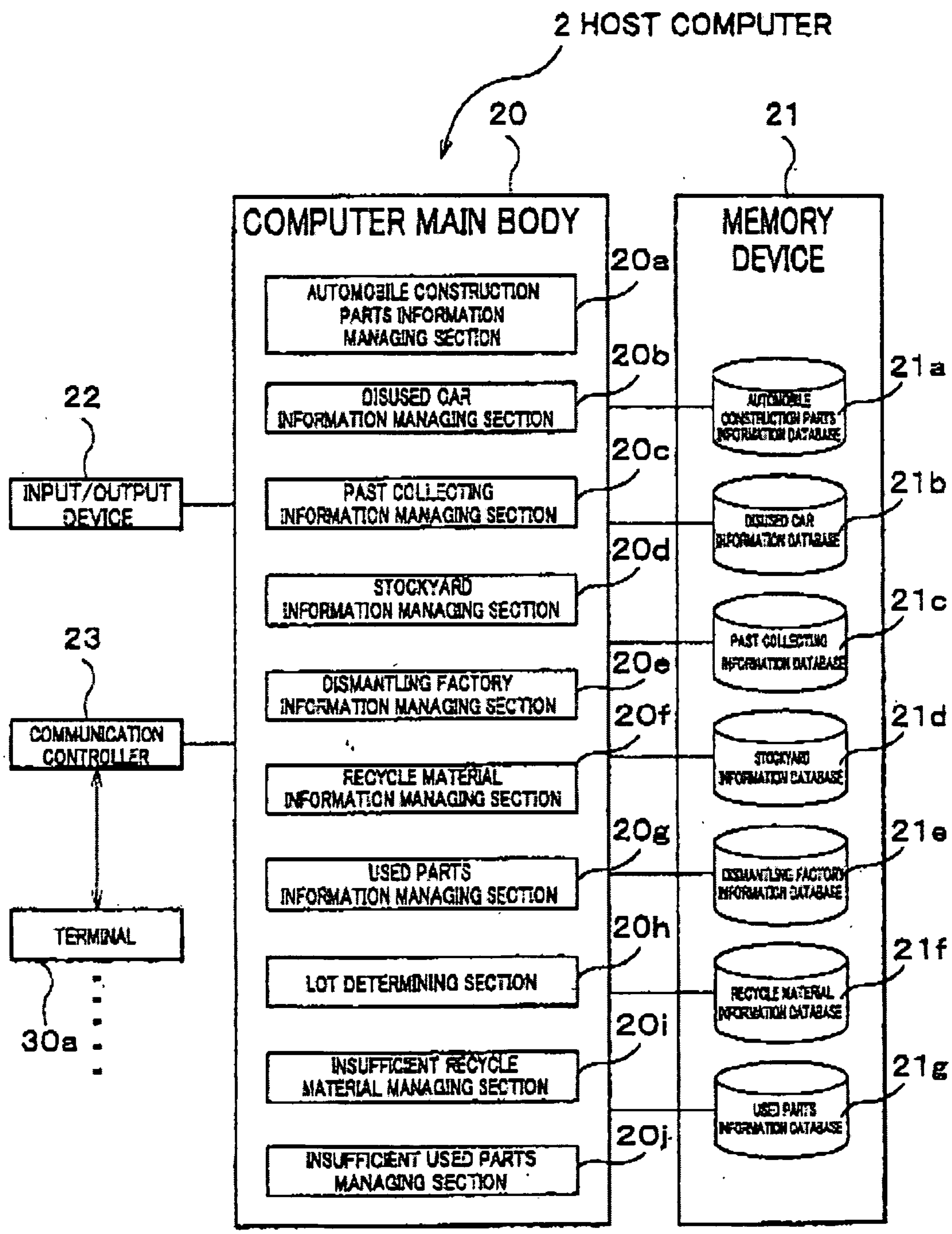
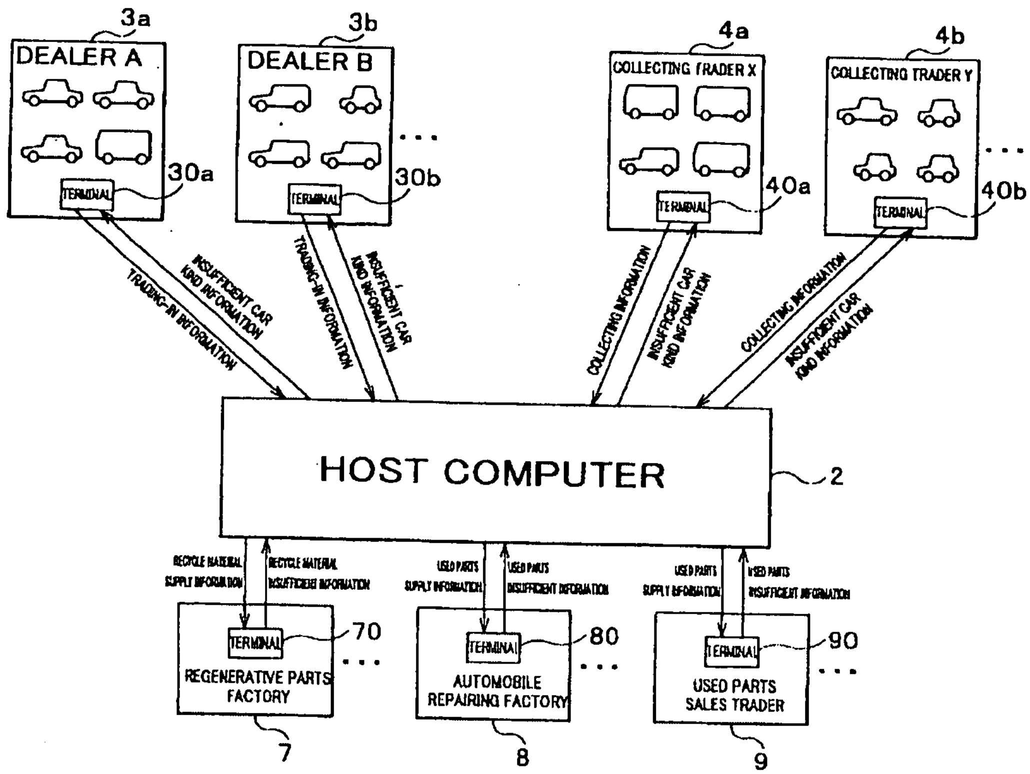

2 HOST COMPUTER
20
21
COMPUTER MAIN BODY
MEMORY DEVICE
20a
AUTOMOBILE CONSTRUCTION PARTS INFORMATION MANAGING SECTION
20b
DISUSED CAR INFORMATION MANAGING SECTION
20c
PAST COLLECTING INFORMATION MANAGING SECTION
20d
STOCKYARD INFORMATION MANAGING SECTION
20e
DISMANTLING FACTORY INFORMATION MANAGING SECTION
20f
RECYCLE MATERIAL INFORMATION MANAGING SECTION
20g
USED PARTS INFORMATION MANAGING SECTION
20h
LOT DETERMINING SECTION
20i
INSUFFICIENT RECYCLE MATERIAL MANAGING SECTION
20j
INSUFFICIENT USED PARTS MANAGING SECTION
21a
AUTOMOBILE CONSTRUCTION PARTS INFORMATION DATABASE
21b
DISUSED CAR INFORMATION DATABASE
21c
PAST COLLECTING INFORMATION DATABASE
21d
STOCKYARD INFORMATION DATABASE
21e
DISMANTLING FACTORY INFORMATION DATABASE
21f
RECYCLE MATERIAL INFORMATION DATABASE
21g
USED PARTS INFORMATION DATABASE
22
INPUT/OUTPUT DEVICE
23
COMMUNICATION CONTROLLER
TERMINAL
30a

FIG.3



It would have been obvious to one skilled in the art at the time of the invention that the recycling management system and method as taught by Suzuki et al. would have benefited from acquiring the machine supply necessary to meet demand in view of the teachings of Kaburagi et al.; the resultant system enabling the recycler to satisfy demand utilizing products/parts not currently in the system (“in stock”) by acquiring products/parts from alternative sources (Kaburagi et al.: Column 3, Lines 6-19).

Regarding Claims 14, 42 and 71 Suzuki et al. wherein the parts demand further comprises (Column 6, Lines 35-68; Column 7, Lines 1-68; Figures 1 and 23) internal

(manufacturing utilized restored/recycled parts; Column 8, Lines 2-6) and external demand ("commercially demanded"; Column 39, Lines 62-68; Column 40, Lines 1-14) and that currently available products/parts that are recycled to meet that combined demand as discussed above.

10. Claims 15-18, 43-46 and 72-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al., U.S. Patent No. 5,965,858 as applied to claims 1-12, 19-40, 47-69 and 76-86 above and further in view of Hoshino, T et al., Optimization Analysis for recycle-oriented manufacturing systems (1995).

Regarding Claims 15, 43 and 72 Suzuki et al. does not expressly teach the utilization of linear programming (a mathematical technique used in economics, finds the maximum or minimum of linear functions in many variables subject to constraints) as claimed.

Hoshino et al. teach determining an optimal dismantling configuration using linear goal programming, an extension of linear programming in which one or more goals are formulated as constraints and the objective functions seeks to minimize the sum of the absolute deviations form these goals, in an analogous art of recycling management in manufacturing systems, for the purposes of maximizing a firm's profit and the recycling rate (Abstract; Paragraph 4, Page 2069; Section 4 Optimization Analysis, Pages 2074-2075).

More generally Hoshino et al. teach method for optimizing a recycling manufacturing system further comprises:

- internal and external parts demand (e.g. supplying recycled/restored parts/products to consumers, suppliers, production division; Page 2071, Bullets i-vi; Page 2072, Paragraphs 1-3; Figure 2); and
- the maximization of a revenue/profit formula wherein total profit, which is to be optimized, is defined as the sum of total revenue from selling obtained products plus total revenue from selling re-producible parts minus total cost to purchase parts and adopting for reuse minus total cost for production, collection and disposition minus cost of dumping parts minus inventory costs of parts (e.g. total profit = total revenues – total costs; Pages 2073-2075; Equations 10-16).

It would have been obvious to one skilled in the art at the time of the invention that the recycling management method and system as taught by Suzuki et al. would have benefited from optimizing a revenue/summation formula linear programming in view of the teachings of Hoshino et al.; the resultant system further enabling the recycling management system to maximize the value of the recycled product (Suzuki et al.: Column 6, Lines 35-40; Hoshino et al.: Abstract) as well as providing the well known automation benefits of utilizing linear programming techniques to determine the maximum of the revenue/profit formula.

Regarding Claims 16, 44 and 73 Suzuki et al. teach a recycling management method and system wherein the system utilizes recycling rules to select an optimal dismantling configuration (optimal recycling process/route for an article/part) that results in the maximum value (profit, revenue, etc.) as discussed above.

Suzuki et al. does not expressly teach the maximizing of a summation formula as claimed.

Hoshino et al. teach maximizing a summation formula wherein the formal comprises a plurality of factors (Section 3.2 Formulation, Pages 2072-2074; Equations 10-16), in an analogous art of recycling manufacturing management for the purposes of optimizing the recycling (restoration, reuse, remanufacture, etc.) processes (method, steps, routes, dismantling configuration, etc.) applied to a plurality of products and their component parts thereby maximizing a firm's profit (Abstract; Paragraph 4, Page 2069).

It would have been obvious to one skilled in the art at the time of the invention that the recycling management method and system as taught by Suzuki et al. would have benefited from maximizing a summation formula in view of the teachings of Hoshino et al.; the resultant system further enabling the recycling management system to maximize the value (profit, revenue) of the recycled product (Suzuki et al.: Column 6, Lines 35-40; Hoshino et al.: Abstract) by determining an optimal recycling process (mix, set, configuration, etc.).

Regarding Claims 17, 45 and 74 Suzuki et al. teach a recycling management system and method that utilizes a rule-based decision engine and a plurality of factors/constraints to maximize the value of the recycled articles parts including but not limited to: profit/revenue from part sales (profitability); net investment cost of machine (purchase price; Column 40, Lines 1-14); processing cost of de-manufacturing machine (disassembly costs; Column 40, Lines 16-68); parts not utilized (disposed, energy source, landfill, etc.; Column 33, Lines 28-68; Figure 1, Elements 13 and 15); and the like.

Suzuki et al. does not expressly teach the utilization of a summation formula or all of the specific factors claimed.

Hoshino et al. teach the maximizing of a summation/revenue formula utilizing a plurality of factors, as listed below, in an analogous art of recycling manufacturing management for the purposes of optimizing a firm's profit (Abstract; Paragraph 4, Page 2069; Section 3.2 Pages 2072-2074; Equations 1-16):

- revenue from part j sales (Bs(t), Br(t));
- net investment cost of machine (Pt(t));
- processing cost of de-manufacturing machine (Pm(t), Pp(t));
- total supply of machine (y(t));
- netted demand of part j (xmm(t), um(t));

- parts not utilized (Vm, αM);

- parts fulfillment (xmm(t), um(t)), q(t)); and

- parts/articles necessary to meet product demand/production (required to fulfill demanded parts; q(t)).

It would have been obvious to one skilled in the art at the time of the invention that the recycling management method and system as taught by Suzuki et al. would have benefited from maximizing a revenue/summation formula utilizing a plurality of factors/constraints in view of the teachings of Hoshino et al.; the resultant system further enabling the recycling management system to maximize the value (profit, revenue) of the recycled product (Suzuki et al.: Column 6, Lines 35-40; Hoshino et al.: Abstract) by determining an optimal recycling process (mix, set, configuration, etc.).

Regarding Claims 18, 46 and 75 Suzuki et al. does not expressly teach the revenue formula as claimed and shown below.

$$\text{Revenue} = \sum_i \sum_j (RV * Xy) - \sum_i TCi * Yi - \sum_i PCi * Yi$$

Hoshino et al. teach the optimization of an old and well known revenue formula of the form profit/revenue = total sales – total costs, in an analogous art of recycling management for the purposes of optimizing a firm's profit (Abstract; Paragraph 4, Page 2069). More specifically Hoshino et al. teach the optimization of the following revenue formula (Pages 2073-205; Equations 10-16):

$$BT = \sum_{t=1}^{T} \frac{Bs(t) + Br(t) - Pp(t) - Pm(t) - \Pr(t) - PI(t)}{1 + r}$$

wherein:

- $B_s(t)$ is the revenue obtained from selling the products/articles;

- $B_r(t)$ is the revenue obtained from selling the re-producible (restorable, remanufacturable, etc.) parts;

- $P_p(t)$ is the cost of purchasing the parts and adopting the parts for reuse (refurbishing, restoring, repairing);

- $P_m(t)$ is the cost of producing, collecting and disposing of the articles/parts; and

- $P_I(t)$ is the inventory costs associated with the articles/parts.

It would have been obvious to one skilled in the art at the time of the invention that the recycling management method and system as taught by Suzuki et al. would have benefited from maximizing a revenue/summation formula utilizing a plurality of factors/constraints in view of the teachings of Hoshino et al.; the resultant system further enabling the recycling management system to maximize the value (profit, revenue) of the recycled product (Suzuki et al.: Column 6, Lines 35-40; Hoshino et al.: Abstract) by determining an optimal recycling process (mix, set, configuration, etc.).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Katayanagi et al., U.S Patent No. 6,321,983, teach a method and system for managing the life cycle of a product from manufacture to destruction. Katayanagi et al. teach that the product life cycle management system utilizes a plurality of databases to store/maintain a plurality of product (machine, part) information.

- Tani et al., U.S. Patent No. 6,529,788, teach a recycling system and method wherein the system utilizes a plurality of machine and part information including but not limited to machine type, component parts of machine (i.e. number of components that can be produced), quality as well as an estimated/forecasted machines/parts for a predetermined period of time. Tani et al. further teach that the system evaluates product demand and upon detecting a shortage in the market orders new product/product recovery cycle.

- Suzuki et al., U.S. Patent No. 6,633,795, teach a recycling management system and method.

- Tateishi et al., U.S. Patent No. 6,856,857, teach a system and method for planning for procurement of parts for production (i.e. to meet production demand) utilizing recovered (recycle, disassembled) part availability information wherein the system procures parts/products when there is insufficient supply to meet demand (i.e. shortfall).

- Bras et al., The Use of Activity-Based Costing, Uncertainty and Disassembly Action Charts in Demanufacture Cost Assessments, teach the application of old and very well known activity-based costing (ABC) techniques (models, approaches, etc.) to determine/optimize the costs/profits associated with the disassembly/de-manufacture of products wherein this information is used to decide which of a plurality of end-of-life activities is economically justifiable. Bras et al. further teach that in ABC the "cost of a product equals the sum of the cost of all activities that must be performed in the realization of the product." Bars et al. further teach that the ABC method takes into account the costs associated with each action/activity including but not limited to the number of units and the time to perform the action (e.g. de-manufacture cycle time). Additionally Bars et al. identify, via case studies, several demanufacturing cost and revenue triggers/drivers including but not limited to buy back price (e.g. net investment value).

- Klausner, Markus et al., Reverse-logistics for product take-back, teach economically supporting (justifying) the recycling of products via remanufacturing. More specifically Klausner et al. teach determining the optimal buy-back and unit cost of reverse logistics (i.e. net investment value) and further that total profit is the sum of the profit from the remanufacturing plus profit from the recycling minus the costs of the reverse logistics/buy-back. Klausner et al. further teach that the machine supply information includes a plurality of attributes including but not limited to remanufacturing yield and average buy-back price.

- Boswell, C.J., A Feedback Strategy for Closed Loop End-Of-Life Cycle Process, teaches performing trade-off analysis for disassembly design wherein the analysis utilizes a plurality of machine supply information such as disassembly time/complexity (life cycle costs) and revenues (market value) from component part sales in order to maximize return (e.g. profit).

- Srinivasan, N. et al., A framework for virtual disassembly analysis, teach the utilization of design for disassembly (DFD) systems that enable engineers to generate designs that minimize costs/maximize profits by taking into account de-manufacturing costs (time, complexity, etc).

- Limaye, Ketain et al., System Simulation and Modeling of Electronics Demanufacturing Facilities, teach a system and method for maximizing the value recover through reuse, remanufacturing and the like. Limaye et al. teach that maximizing recovery value utilizes information on revenue, driven by market supply and demand forces, and cost, Total Cost =

$$\sum_i \sum_j (CostOfActivityJ * QuantityOfActivityJfor\Pr oducti) * Numberof\Pr oductsOfTypei .$$

- Jayaraman et al., A closed-loop logistics model for remanufacturing, teaches a material recovery system and method wherein the system utilizes a plurality of end-of-life strategies including but not limited to repair, recycling and remanufacturing to assist managers in making better remanufacturing decisions (i.e. minimizing costs) by taking into account a plurality of factors wherein the factors include the set of products, forecasted remanufactured product demand, per unit added value cost and the like.

Jayaraman et al. further teach that "remanufacturing offers several advantages as a form of waste reduction since it is profitable and environmentally conscious."

- Erwin van der Laan et al., Inventory Control in Hybrid Systems with Remanufacturing, teach a planning and inventory control system and method wherein manufacturing and remanufacturing operations occur simultaneously (e.g. meeting demand utilizing a configuration/set of manufactured and remanufactured products).

- Grenchus, Ed et al., Composition and Value of Returned Consumer and Industrial Information Technology Equipment, teach a method, utilized by IBM's Recovery Centers, for determining the "break points" (break even points) for remanufactured and/or demanufactured products that are returned after the end of a lease wherein the goal of the system is to maximize return value and minimize expenses.

- Grenchus, Ed, Demanufacturing of Information Technology Equipment, teaches the establishment, in 1994, of IBM's Reutilization/Recovery center wherein product recovery is achieved through reuse, resale (parts, materials, etc.) and recycling. Grenchus further teaches that the reutilization process takes into account a plurality of factors including but not limited to product grade, internal/external demand and a detailed disassembly analysis/details. Grenchus further teaches that the goals for IBM's recovery center include: obtaining a high return from the sale of machines and parts, achieving an optimum balance between commodity separation and separation expense and maximizing the amount of material being reused/recycled.

- Di Marco, Patrick et al., Compatibility Analysis of Product Design For Recyclability and Reuse, teach a method and system for evaluating a product's design with end-of-life/retirement issues including such factors as ease of disassembly and material selection. Di Marco et al. teach that disassembly cost analysis is a key factor to consider and can be determined utilizing a well known equation(s).

- Jung, Leah, The Conundrum of Computer Recycling, teaches the growth of computer recovery efforts wherein recovery businesses configure recovery processing of used computers for resale, refurbishment, component/parts recovery and recycling in order to "recover as much value from the used equipment as possible." Jung further teaches that recovery businesses make "constant decisions about the level of dismantling and material separation to pursue" (e.g. economic justification for recovery, maximize profits, minimize costs, etc.).

- Sony Corp, JP 2002-230087 – Method for evaluating recyclability and device for the same and method for designing product using same method, teaches a system and method for evaluating the cost performance of recycling wherein the system determines de-manufacturing/decomposition costs and fair market price for recycle materials in order to determine profit or loss of the recycling effort (i.e. economic viability).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott L. Jarrett whose telephone number is (571) 272-7033. The examiner can normally be reached on Monday-Friday, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hafiz Tariq can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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SJ
9/7/2005

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